

Chapter 14 The Human Genome

Section 14–1 Human Heredity (pages 341–348)



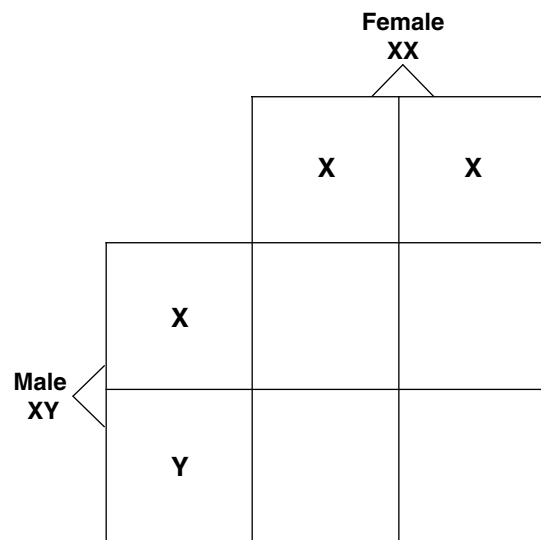
Key Concepts

- How is sex determined?
- How do small changes in DNA cause genetic disorders?

Human Chromosomes (pages 341–342)

- How do biologists make a karyotype? _____

- Circle the letter of each sentence that is true about human chromosomes.
 - The X and Y chromosomes are known as sex chromosomes because they determine an individual's sex.
 - Males have two X chromosomes.
 - All the chromosomes except the sex chromosomes are autosomes.
 - Biologists would write 46,XY to indicate a human female.
- Complete the Punnett square below to show how the sex chromosomes segregate during meiosis.



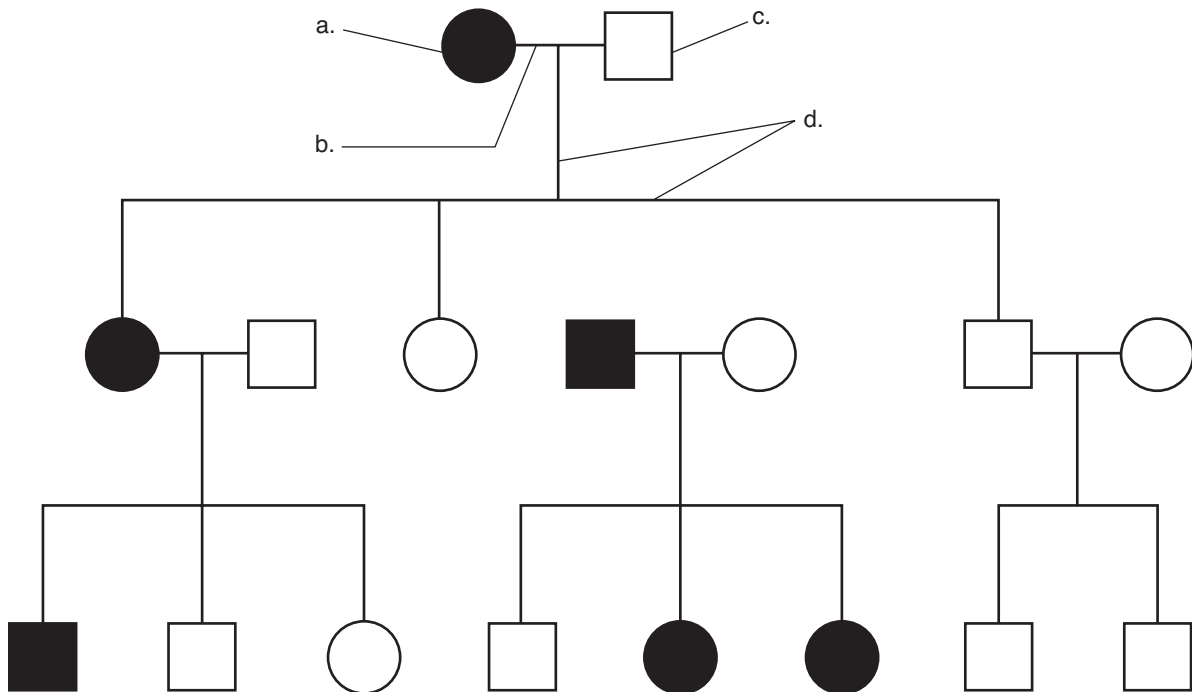
- Why is there the chance that half of the zygotes will be female and half will be male?

Human Traits (pages 342–343)

5. What does a pedigree chart show? _____

Match the labels to the parts of the pedigree chart shown below. Some of the parts of the pedigree chart may be used more than once.

Pedigree Chart



- _____ 6. A person who expresses the trait
- _____ 7. A male
- _____ 8. A person who does not express the trait
- _____ 9. Represents a marriage
- _____ 10. A female
- _____ 11. Connects parents to their children

12. Give two reasons why it is impossible to associate some of the most obvious human traits with single genes.

- a. _____
- b. _____

Human Genes (pages 344–346)

13. Why is it difficult to study the genetics of humans? _____
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14. Circle the letter of each sentence that is true about human blood group genes.
- a. The Rh blood group is determined by a single gene.
 - b. The negative allele (Rh^-) is the dominant allele.
 - c. All of the alleles for the ABO blood group gene are codominant.
 - d. Individuals with type O blood are homozygous for the i allele (ii) and produce no antigen on the surface of red blood cells.
15. Is the following sentence true or false? Many human genes have become known through the study of genetic disorders. _____

Match the genetic disorder with its description.

Genetic Disorder	Description
_____ 16. Phenylketonuria (PKU)	a. Nervous system breakdown caused by an autosomal recessive allele
_____ 17. Tay-Sachs disease	b. A form of dwarfism caused by an autosomal dominant allele
_____ 18. Achondroplasia	c. A buildup of phenylalanine caused by an autosomal recessive allele
_____ 19. Huntington disease	d. A progressive loss of muscle control and mental function caused by an autosomal dominant allele

From Gene to Molecule (pages 346–348)

20. What is the normal function of the protein that is affected in cystic fibrosis?
- _____
- _____
21. A change in just one DNA base for the gene that codes for the protein _____ causes sickle-shaped red blood cells.
22. What is the advantage of being heterozygous for the sickle cell allele?
- _____
- _____
23. What makes an allele dominant, recessive, or codominant? _____
- _____
- _____